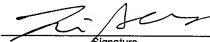



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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 102863-23 (ETH5081USNP)	
		Application Number 10/718,122, Conf. #9095	Filed November 20, 2003
		First Named Inventor R. Christopher Carney et al.	
		Art Unit 1725	Examiner Maria Alexandra Elve
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <p><input type="checkbox"/> applicant/inventor.</p> <p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p> <p><input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>44,238</u></p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____</p> <p>Signature <u></u> Lisa Adams Typed or printed name</p> <p>(617) 439-2550 Telephone number</p> <p>April 21, 2009 Date</p> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</p> <p><input type="checkbox"/> *Total of <u>1</u> forms are submitted.</p>			

Pre-Appeal Brief Request for Review	
I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4).	
Dated: April 21, 2009	Signature for Lisa Adams: <u></u>

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	R. Christopher Carney et al.
Application No.:	10/718,122
Filed:	November 20, 2003
Entitled:	METHOD AND APPARATUS FOR LASER DRILLING WORKPIECES
Docket No.:	102863-23 (ETH5081USNP)

Group Art Unit: 3742
Examiner: Maria Alexandra Elve

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

COMMENTS FOR PRE-APPEAL BRIEF REVIEW

Dear Madam:

These comments are being filed concurrently with a Notice of Appeal and a Pre-Appeal Brief Request for Review. A fee of \$30 is included herewith, representing the difference between the FY2009 Notice of Appeal fee and the fee already paid by Applicants on March 14, 2008.¹

I. Claim Rejections Pursuant to 35 U.S.C. §103(a) – “Kimura, Clark, & Takahashi”

Claims 1 and 5-6 stand rejected pursuant to 35 U.S.C. §103(a) as being obvious over JP 01-215290 (“Kimura”) in view of U.S. Patent No. 4,201,905 (“Clark”) and further in view of U.S. Patent No. 4,581,939 (“Takahashi”). The Examiner argues that Kimura discloses the inventions of claims 1 and 6, except for isolating the laser from the workpiece and providing a spherical focusing lens. *Office Action* at 2. The Examiner relies on Clark and Takahashi, respectively, to teach these limitations, arguing that it would have been obvious to modify the device of Kimura in view of Clark and Takahashi. Applicants respectfully disagree.

A. Kimura Lacks a Vibrating Frame and No Motivation Exists to Modify It’s Frame to Vibrate

Claims 1 and 6 require a workpiece engaged by a first vibrating frame. As explained at length in Applicants’ response dated September 29, 2008, Kimura is deficient with respect to each of these claims because it altogether lacks a *vibrating* frame. Instead, the sample (3) of Kimura is fixed to a stage (6) that only moves according to precise instructions from a stage controller (7). *See Kimura* at 3-4; *Kimura Figs. 1, 6*. Absent specific instruction from the stage controller, the Kimura stage does not move at all, much less vibrate as required by claims 1 and 6. Accordingly, Kimura fails to teach or even suggest an express limitation of the claimed invention.

Although Clark could arguably be construed to teach a vibrating frame, no skilled artisan would modify Kimura to include a vibrating frame since doing so would render Kimura’s device inoperable. In order to cut a pattern into a sample, without destroying the delicate living cell, Kimura relies on controlling the speed and movement of the frame with great precision. As explained above, movement is precisely controlled to cut around the edge of a sample. This is done to maintain viability of the living cells in the sample. Any vibration of the

¹ Pursuant to MPEP § 1207.04, when a Notice of Appeal fee is paid and prosecution is re-opened prior to a decision on the merits by the Board, the fee can be applied to subsequent appeals.

frame and/or workpiece would be *fatal* to the Kimura method, as this uncontrolled movement would risk damage to the cell. This is specifically contrary to the teachings of Kimura, as explained in the Problems to Be Solved By the Invention section. In particular, Kimura explains that prior art lasers kill living samples because the lasers only move in the X and Y direction, thus necessarily cutting through the spherical cells. To solve this problem, Kimura designed a system that detects the shape of the living cells and allows the laser to move in the Z direction to avoid cutting through the cells and instead to cut around the cells. Again, any vibration would prevent such precise controlled movement and would destroy the cells. Such a modification is therefore specifically contrary to the teachings of Kimura and would never be made by a person having ordinary skill in the art. This reason alone is sufficient to render claims 1 and 6, as well as claim 5 which depends therefrom, patentable over Kimura.

B. Each Of the Cited References Lacks a Lens Mounted to the Same Frame as the Sample and No Motivation Exists to Add Such a Lens to Kimura

Kimura further fails to teach or suggest a lens mounted to the same frame as the sample such that the lens vibrates substantially in unison with the frame, as further required by claims 1 and 6. Instead, the exact opposite is true – Kimura specifically requires that the sample and the lens be mounted to separate frames. This independent movement is illustrated in Figures 1 and 6 of Kimura, which show a sample (3) mounted to a stage (6) and an objective lens (1) and laser beam (2) held stationary above the stage. As explained in Kimura, movement of the stage (6) is controlled by a stage controller (7) and movement of the lens is controlled by a lens-moving controller (15) and lens-moving device (14). Thus, because the lens and sample of Kimura are mounted separately, Kimura lacks a lens mounted to the same frame as the sample, as required by claims 1 and 6.

Clark is similarly deficient because it too lacks a lens that vibrates substantially in unison with the frame by which the workpiece is engaged as claimed. To the contrary, as shown in FIG. 4 of Clark, the cutting head (17) and lens (54) are separated from the work table (71) by a shock-isolating cylinder (47, 48). In fact, Clark expressly states the opposite of what is claimed -- that the cutting head (17) and lens (54) mounted therein are “substantially shock isolated from the punch frame” and that “the springs cooperate with the air cylinder support to shock isolate the cutting head [and the lens].” *Clark* at col. 9, ll. 59-67. Thus, the Clark lens does not vibrate substantially in unison with the frame with which the work piece engages, as claimed, and in fact teaches away from such a configuration.

Furthermore, even if one of these references were to teach mounting the lens to the same frame as the sample, no person skilled in the art would so modify Kimura since doing so would render the device unsatisfactory for its intended purpose and change its principle of operation, in violation of MPEP § 2143.01(V) and (VI). It is a fundamental requirement of Kimura that the lens and sample not be mounted to the same frame, since such a configuration would prevent the sample from moving independently of the lens. As explained above, the whole purpose of Kimura is to move the sample relative to the lens and laser to cut the outline of a cell. If the sample were mounted to the same frame as the lens, as required by claims 1 and 6, the sample could only be cut at one distinct point. There is thus no motivation to modify Kimura to reach the claimed invention.

C. Kimura Fails To Teach Drilling Holes And No Motivation Exists To Modify Kimura To Drill Holes

As conceded by the Examiner, Kimura fails to teach drilling holes. *Final Office Action dated 11/14/2007* at 2. Rather, as the stage (6) of Kimura is moved beneath a stationary laser (2), the laser (2) etches around three-dimensional cells suspended in a sample (3). *See Kimura* at 2-3; *Figures 2, 6*. As explained at page 2 of Kimura, the Kimura device is designed to remove material surrounding a generally spherical cell, such as a fertilized ovum, without damaging or killing the sample. Drilling a hole through the sample would be entirely contrary then to the purpose of Kimura, as it would destroy the delicate cell. Accordingly, there is no way to modify Kimura to drill a hole while still maintaining its intended capability of cutting around a delicate, three-dimensional cell. A reference directed toward drilling holes does not provide any advantage when trying to carve living cells from a sample as in Kimura. In fact, one seeking to modify Kimura would want to ensure that the laser *doesn't* drill holes in the cell, since the entire purpose of Kimura is to avoid damage to the fragile living sample. Thus, there is no motivation to modify Kimura to drill holes.

D. There is no Motivation to Modify Kimura with the Spherical Lens of Takahashi

The Examiner also concedes that Kimura fails to teach or suggest yet another limitation of claims 1 and 6 – a spherical lens. The Examiner relies on Takahashi to teach a spherical lens, but again, no motivation is provided to combine this reference with Kimura. As discussed in Applicants' response dated September 29, 2008, it is well settled that "the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992). Takahashi does not provide any teachings relating to the spherical lens that would motivate a skilled artisan to use such a lens with Kimura. Instead, Takahashi merely states that a spherical lens is used, without providing any advantages to doing so.

E. Kimura is Non-Analogous Art

Lastly, it is inappropriate to rely on Kimura at all, as it is non-analogous art. As explained in detail in Applicants' response dated September 29, 2008, Kimura is neither within the field of the inventor's endeavor or reasonably pertinent to the particular problem with which the inventor was involved. Accordingly, Kimura is non-analogous art and reliance thereon is inappropriate.

In sum, Kimura is deficient with respect to at least four limitations of claims 1 and 6, none of which is adequately addressed by the secondary references cited by the Examiner. Moreover, Kimura is non-analogous art, and as such cannot be relied upon to reject the claimed invention as obvious. Accordingly, claims 1 and 6 are not obvious over Kimura, Clark, or Takahashi, taken alone or in combination. Claim 5 is not obvious at least because it depends claim 1.

II. Claim Rejections Pursuant to 35 U.S.C. §103(a) – "Bosch, Clark, Hillier, & Takahashi"

Claims 1 and 5-6 stand rejected pursuant to 35 U.S.C. §103(a) as being obvious over DE 3938779 ("Bosch"), in view of Clark, U.S. Patent No. 2,496,051 ("Hillier"), and Takahashi.

The Examiner argues that Bosch teaches drilling holes in a vibrating workpiece, that Clark teaches isolating the laser from the workpiece, that Hillier teaches providing a work piece and a lens that vibrate substantially in unison with a first vibrating frame, and that Takahashi teaches a spherical lens. *Office Action* at 3. The Examiner argues that it would have been obvious to modify Bosch with the teachings of Clark, Hillier, and Takahashi to arrive at the claimed invention. *Id.* Applicants respectfully disagree.

A. No Motivation Exists to Combine the Unitary Lens/Stage of Hillier with Bosch

"The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious." MPEP § 2141(III). The Supreme Court in *KSR Int'l Corp. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1741 (2007), quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), stated that "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." Here, the only reasoning the Examiner has provided for combining the lens/stage arrangement of Hillier with the fuel injector drill of Bosch is to "minimize machining errors due to drift." This argument fails, however, because Bosch is already effective to eliminate drift-related machining errors. In fact, this is the exact reason why the Bosch workpiece is rotated and ultrasonically oscillated up and down during the drilling operation – to achieve a uniform bore hole in the workpiece. See *Bosch* at col. 1; lns. 6-57. Moreover, modifying the Bosch drill to have a unitary lens/workpiece holder as taught by Hillier would counteract this feature. If the lens and workpiece of Bosch were to move in unison as taught by Hillier, the rotation and oscillation of the workpiece would be negated by the identical rotation and oscillation of the lens, resulting in a bore hole that is no more uniform than had the lens and workpiece both been stationary.

In sum, Bosch is already effective in reducing machining errors due to drift because it already includes a mechanism for rotating and oscillating the workpiece with respect to the laser beam. Moreover, even if Bosch could benefit from the Examiner's proposed combination, the combination would actually increase machining errors and distortion of the bore hole. Accordingly, no skilled artisan would have been motivated to combine the teachings of Bosch and Hillier to reach the inventions of claims 1 and 6.

B. The Examiner's Proposed Combination is Impossible

Furthermore, it would have been impossible to incorporate the unitary lens/sample holder (4, 25) of Hillier with the apparatus of Bosch because in Hillier, the beam passes through the sample *before* passing through the lens. Such a configuration would render the Bosch apparatus useless, as the multiple laser beams (6) would not be focused to a single point until *after* passing through the workpiece (it is not until the Bosch beams (6) pass through the lens (8) that they are focused to a single point). Put differently, the only way to modify Bosch to include the Hillier teaching of the sample and the lens vibrating in unison would be to put the workpiece (1) of Bosch between the laser (5) and the top of the lens (8). If this is done, however, the laser beams (6) of Bosch will hit the workpiece (1) before being focused on the target drilling site by the lens (8), thereby producing multiple holes in the workpiece. This result is unacceptable in Bosch, where a single, perfectly uniform hole is desired. Accordingly, it

is not possible to combine the teachings of Bosch and Hillier as suggested by the Examiner to reach the inventions of claims 1 and 6.

C. No Motivation Exists to Combine the Spherical Lens of Takahashi with Bosch

The Examiner relies on Takahashi to teach a spherical lens, but no motivation is provided to combine this reference with Bosch and/or Hillier other than that to do so would be an obvious rearrangement of parts. For the same reasons discussed above with respect to Kimura, no motivation exists to combine the spherical lens of Takahashi with Bosch.

D. Clark

Clark is relied upon merely to teach mounting the laser to a frame that is isolated from the workpiece and does nothing to remedy the deficiencies discussed above in Bosch, Hillier, and Takahashi.

Consequently, independent claims 1 and 6 are not obvious over Bosch, Clark, Hillier, or Takahashi, taken alone or in combination. Claims 1 and 6 therefore represent allowable subject matter and claim 5 is likewise allowable at least because it depends from an allowable base claim.

III. Dependent Claim Rejections Pursuant to 35 U.S.C. §103(a)

Claims 2-4 and 7-8 are rejected pursuant to 35 U.S.C. §103(a) as being obvious over Kimura, Clark, Takahashi, and U.S. Patent No. 6,252,195 ("Mosavi"). Claims 2-4 and 7-8 are also rejected as being obvious over Bosch, Clark, Hillier, Takahashi, and Mosavi. Mosavi is merely relied upon to teach discrete features recited in the dependent claims, and does not remedy the deficiencies of Kimura and Bosch discussed above with respect to the independent claims. Claims 2-4 and 7-8 are therefore non-obvious and allowable at least because they depend from allowable base claims.

IV. Conclusion

Accordingly, all pending claims are now in condition for allowance, and allowance thereof is respectfully requested. The Examiner is encouraged to telephone the undersigned attorney for Applicants if such communication is deemed to expedite prosecution of this application.

Date: April 21, 2009

Respectfully submitted,



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